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EXAMINER

BRYANT, DOUGLAS J.

ART UNIT

PAPER NUMBER

2195

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DELIVERY MODE

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PAPER

**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

|                              |                                      |  |  |
|------------------------------|--------------------------------------|--|--|
| <b>Office Action Summary</b> | <b>Application No.</b><br>10/530,582 | <b>Applicant(s)</b><br>JACKSON, DAVID B. |  |
|                              | <b>Examiner</b><br>DOUGLAS BRYANT    | <b>Art Unit</b><br>2195                  |  |

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 11 August 2006.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-33 and 36-44 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-33 and 36-44 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 11 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- |  |   |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                       | 4) <input type="checkbox"/> Interview Summary (PTO-413)           |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)   | Paper No(s)/Mail Date. _____                                      |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date <u>11/11/2009, 1/26/2010, 2/18/2010</u> .                        | 6) <input type="checkbox"/> Other: _____                          |

**DETAILED ACTION**

1. Claims 1-33 and 36-44 are pending.

***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

2. Claims 1-33 and 36-44 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

- a. The following claim language is not clearly understood:

- i. As per claim 1, lines 5 and , it is not clearly understood what type of “guarantees” are associated with the first and second request, is the guarantee for exclusive rights to a resource or guarantee for a particular quality of service or guarantee for a particular time frame? As per claim 1, lines 5 and 11, it is not clearly defined what is going to happen after the constraints and guarantees are analyzed (i.e. meeting or not meeting the criteria), are the requests distributed or allocated to resources that meet the criteria?
- ii. As per claims 36, 38, and 40, they all have similar deficiencies as claim 1.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

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(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

3. Claims 1-10, 16, 23, 27-34 and 36-45 are rejected under 35 U.S.C. 103(a) as being unpatentable over Neiman et al (Neiman) US Patent Application 2003/0154112 A1, in view of Kan (Kan) US Patent 5,355,508.

4. Neiman et al. was submitted in the IDS filed on February 18, 2010.

5. As to claim 1, Neiman teaches a method of allocating resources within a compute environment, the method comprising:

receiving a first request for a reservation for a first type of resource in a compute environment (**Abstract, lines 2-4**);

analyzing constraints and guarantees associated with the first request in a compute environment comprising a plurality of networked computing devices (**Para 84, lines 1-6; Para 149, 1-12**);

identifying a first group of resources that meet the first request (**Para 63, lines 5-11**);

receiving a second request for a reservation for a second type of resource in a compute environment (**Abstract, lines 8-10**);

analyzing constraints and guarantees associated with the second request in a compute environment comprising a plurality of networked computing devices (**Para 84, lines 1-6; Para 149, 1-12**);

identifying a second group of resources that meet the second request (**abstract, lines 22-25; its understood that the unallocated resources is the second group of resources**).

6. Neiman is silent to the teachings of generating a co-allocation between the first and the second group of resources.

7. However Kan discloses the system controller 43 will recognize an appropriate resources (which parallel data processing units SIMD 50 or MIMD 51 or both) to use for different processing request (**col. 7, lines 32-40; col. 8, lines 32-47, 52-55, 62-66. {In the hybrid parallel processing mode, the system requires to use both SIMD and MIMD processing elements concurrently. As such, after receiving the hybrid request, its understood, the system co-allocates both types of processing elements at the same time}**). Kan does not specifically teach the co-allocation map that was generated; although it is evident that a person of ordinary skill would have realized Kan's system for allocating appropriate resources for different request.

8. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to incorporate the teaching of Kan into those of Neiman to have a co-allocation map displaying all of the available resources that satisfied all request for reservation. This modification would have been obvious because one of ordinary skill in the art would to know the availability of all of the resources so that the reservations of each request can be

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allocated and distributed in accordance with all policies and guarantees allowing for the system to run at an optimal level.

9. As to claim 2, Kan teaches the method of claim 1, further comprising reserving resources according to the generated co-allocation map **(Col 4, lines 35-36; col. 8, lines 62-66).**

10. As to claim 3, Kan teaches the method of claim 1, wherein generating the co-allocation map comprises identifying a reduced map of quantities of resources that can simultaneously satisfy the first request and second request **(Col 7, lines 32-40; one or more programs which are executed by the system controller 43 makes it possible to use the SIMD type parallel data processing unit 50 and the MIMD unit 51 independently and simultaneously in order to process different data 63 and 64 within the common memory. 110 indicates such a hybrid parallel processing. Due to this function, different types of parallel processing can be used simultaneously with the same system procedure within a single system.)**

11. As per claim 4, Neiman and Kan teaches the invention substantially as claimed in claim 3. Kan did not specifically teach generating a co-allocation map comprising all time frames where the available resources exists satisfying the first request and the second request.

12. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to display the times frames of all of the available resources that satisfied all co-allocation requests for reservation. This modification would have been obvious because of

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one of ordinary skill in the art would want a co-allocation map consisting of all the available resources and their time frames that can satisfy all resource reservation requests displayed in the co-allocation map.

13. As to claim 5, Neiman teaches the method of claim 1, wherein the first and second request of resources comprise at least one of: compute resources, disk storage resources, network bandwidth resources, memory resources, licensing resources (**Para 36, lines 14-18; compute requests means that it is requesting compute resources**).

14. As to claim 6, Kan teaches the method of claim 1, wherein generating the co-allocation map further comprises identifying an intersection of the availability of each of the first type of resource and the second type of resource (**Col. 7, line 67-68 - Col. 8, line 6; 112 indicates a hybrid parallel processing which is made possible by independent and parallel operation of the two parallel data processing units 50 and 51. In this case, the SIMD type parallel data processing unit 50 uses data 71 within the common memory to carry out a processing 72 and at the same time, the MIMD type parallel data processing unit 51 uses the same data 71 to carryout a different parallel processing 73**).

15. As to Claim 7, Kan teaches the method of claim 6, wherein generating the co-allocation map further comprises determining intersecting time frames in which both the first request and the second request may be simultaneously satisfied (**Col 7, lines 32-40; one or more programs which are executed by the system controller 43 makes it possible to use the SIMD type**

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parallel data processing unit 50 and the MIMD unit 51 independently and simultaneously in order to process different data 63 and 64 within the common memory. 110 indicates such a hybrid parallel processing. Due to this function, different types of parallel processing can be used simultaneously with the same system procedure within a single system.)

16. As to claim 8, Kan teaches the method of claim 7, further comprising: generating a resulting array of events describing the intersecting time frames **(In the hybrid parallel processing mode, the system requires to use both SIMD and MIMD processing elements concurrently. As such, after receiving the hybrid request, inherently, the system co-allocates both types of processing elements in the same time frame which would display intersecting time frames of available and non-available resources).**

17. As to claim 9, Neiman teaches the method of claim 8, wherein array of events comprises at least one of resource quantity, resource quality, time frames, quality of information and cost **(Para 149, lines 10-12).**

18. As to claim 10, Kan teaches the method of claim 1, wherein the first request and the second request comprise at least one of: a job description, at least one time frame availability, a description of minimum resources, a description of resource types and attributes, a reservation duration minimum **(Abstract, lines 1-4; 8-12).**



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19. As to claim 16, Neiman and Kan teaches the invention substantially as claimed in claim 1. Kan did not specifically teach that the request for a first type or second type of resource for a time frame and the analyzing step takes into consideration the time frames for the first and second request.

20. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to take into account during the analyzing step the time frames of each the first and second resource types. This modification would have been obvious because of one of ordinary skill in the art would want the analyzing step to consider the requested time frames for resources so the system can be more optimal when granting request for resources.

21. As to claim 23, Kan teaches the method of claim 1, wherein the co-allocation map is computed as one of an *intersection*, a union or a distinct response **(In the hybrid parallel processing mode, the system requires to use both SIMD and MIMD processing elements concurrently. As such, after receiving the hybrid request, inherently, the system co-allocates both types of processing elements in the same time frame which would display intersecting time frames of available and non-available resources).**

22. As to claim 27, Kan is silent to the fact wherein a requestor may select that generating an co-allocation map returns an analysis to at least one intersection, union, or distinct response.

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23. It would have been obvious to a person of ordinary skill in the art at the time the invention was made to allow the requestor to choose that a co-allocation map displaying all of the available resources that intersect or have a union or distinct response. This modification would have been obvious because of one of ordinary skill in the art would want the requestor to be able to choose if generating a co-allocation map consisting of all the available resources that can satisfy all resource reservation requests that can run simultaneously.

24. As to claim 28, Kan teaches the method of claim 27, wherein the analysis returned to the requestor, according to at least one of the intersection, union or distinct response, corresponds to an analysis of the quantity of resources **(In the hybrid parallel processing mode, the system requires to use both SIMD and MIMD processing elements concurrently. As such, after receiving the hybrid request, inherently, the system co-allocates both types of processing elements in the same time frame which would display intersecting time frames of available and non-available resources)** and a degree of fulfillment of the request according to available resources **(Col 4, lines 39-45)**.

25. As to claim 29, Kan teaches the method of claim 28, wherein the analysis returned to the requestor further comprises a list of resources that can fulfill the request of the requestor **.(In the hybrid parallel processing mode, the system requires to use both SIMD and MIMD processing elements concurrently. As such, after receiving the hybrid request, it is understood, the system co-allocates both types of processing elements at the same time).**

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26. As to claim 30, Kan teaches the invention substantially as claimed in the claim 28.

Kan did not specifically teach wherein the analysis returned to the requestor further comprises a transaction ID associated with the analysis.

27. However it would have been obvious to one of ordinary skill in the art at the time the invention was made to have the analysis step to return a transaction ID associated with the analysis. This would allow for the requestor to associate its request with the analysis that was return making the system more efficient.

28. As to claim 31, Kan teaches the invention substantially as claimed in the claim 30.

Kan did not specifically teach presenting to the requestor an option to submit the request with reference to the transaction ID.

29. However it would have been obvious to one of ordinary skill in the art at the time the invention was made to allow the requestor an option to submit the request with reference to the transaction ID once the co-allocation map was created producing a reduced quantity of resources to satisfy the reservation request. Therefore one would be motivated to utilize this concept to improve the overall efficiency of the resource co-allocating system.

30. As to claim 32, Kan teaches a method of claim 1, wherein the generated co-allocation map represents a set of resources associated to at least one of the first request or the second

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request (**Col 8, line 62-65; simultaneous execution and exclusive control of components {resources} are associated with request**).

31. As to claim 33, Kan teaches the method of claim 32, wherein the first request specifies exclusivity of the set of resources (**Col. 8 lines 46-47**).

32. As to claims 36, 38, and 40, they are rejected on the same rationale as claim 1 mentioned above.

33. As to claims 37, 39, and 41, they are rejected under the same rationale as claim 2 mentioned above.

34. As to claim 42, Kan teaches a method of co-allocating resources within a compute environment, the method comprising:

receiving via a processor a first request for a reservation for a first type of resource in a compute environment (**Abstract, lines 2-4**);

analyzing via a processor constraints and guarantees associated with the first request in a compute environment comprising a plurality of networked computing devices (**Para 84, lines 1-6; Para 149, 1-12**);

identifying via a processor a first group of resources that meet the first request (**Para 63, lines 5-11**);

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receiving via a processor a second request for a reservation for a second type of resource in a compute environment (**Abstract, lines 8-10**);

analyzing via a processor constraints and guarantees associated with the second request in a compute environment comprising a plurality of networked computing devices (**Para 84, lines 1-6; Para 149, 1-12**);

identifying via a processor a second group of resources that meet the second request (**abstract, lines 22-25; its understood that the unallocated resources is the second group of resources**).

Kan teaches generating via a processor a set of resources exclusive to at least one of the first request or the second request (**Col 8, line 62-65; simultaneous execution and exclusive control of components {resources}**).

35. As to claim 43, Kan teaches the method of claim 42, wherein the first request specifies exclusivity of the set of resources for the first request (**Col. 8 lines 46-47**).

36. As to claim 44, Kan teaches the method of claim 43, further comprising: guaranteeing that the first request will be able to reserve exclusive resources (**Col 8, lines 42-43**).

37. Claims 11-15, 17-22 and 24-26, are rejected under 35 U.S.C. 103(a) as being unpatentable over Neiman et al (Neiman) US Patent Application 2003/0154112 A1, in view of Kan (Kan) US Patent 5,355,508, and in further view of Rottoo (Rottoo) International Application WO 98/58518.

38. As to claim 11, Neiman and Kan teaches the invention substantially as claimed in the claim 1. Kan is silent to the teaching of how resource availability changes over time.

39. However Rottoo teaches how resources availability changes over time (**Pg 10, lines 13-16**).

40. It would have been obvious to one of ordinary skill in the art at the time the invention was made to incorporate the teachings of Rottoo into the methods of Neiman and Kan to display the time changes in relation to the first and second request. This modification would have been obvious because one of ordinary skill in the art would want to know the resource availability changes over time in order to correctly have requests granted.

41. As to claim 12, Rottoo teaches the method of claim 11, wherein the events comprise at least one of job start, job completion, state change, boundaries, reservations and policy enforcement limits (**Pg 5, lines 10-12**).

42. As to claim 13, Rottoo teaches the method of claim 1, further comprising reporting at least one of the following parameters associated with the identified first and second group of resources: cost, quality of information data, resource quantity data, time frame data, and resource quality data (**Pg 2, 16-17; Pg 7, lines 3-6**).

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43. As to claim 14, Rottoo teaches the method of claim 1, further comprising: performing again, under constraints identified by the co-allocation map, the step of identifying a first group of resources that meet the request for the first type of resource (**Pg 6, lines 31-33**).

44. As to claim 15, Rottoo teaches the method of claim 14, further comprising: performing again, under constraints identified by the co-allocation map, the step of identifying a second group of resources that meet the request for the second type of resource (**Pg 6, lines 31-33**).

45. As to claim 17, Rottoo teaches the method of claim 1, wherein the constraints are at least one of resource matching in terms of type, attribute or quantity (**Abstract, line 29; indicates exactly what resources must be used**).

46. As to claim 18, Rottoo teaches the method of claim 1, wherein the first and second constraints of the first and second constraints and guarantees associated with the first request and the second request relate to resource-based policies (**Pg 2, lines 14-20; bandwidth**).

47. As to claim 19, Rottoo teaches the method of claim 1, wherein the first and second constraints and guarantees associated with the first request and the second request relate to time-based policies (**Pg 2, lines 16-20; start time and duration**).

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48. As to claim 20, Rottoo teaches the method of claim 19, wherein the time-based policies limit requestors to a pre-determined quantity of resources at any given moment in time (**Pg 7, lines 10-14**).

49. As to claim 21, Rottoo teaches the method of claim 1, wherein receiving a request for a reservation for a first type of resource further comprises receiving a request for a reservation for the first type of resource having an attribute (**Abstract, lines 25-27; Pg 2, line 17; Bandwidth**).

50. As to claim 22, Rottoo teaches the method of claim 21, wherein the attribute is at least one of disk storage space, memory, license scope, network bandwidth capability, clock speed and central processing power (**Pg 2, line 17; Bandwidth**).

51. As to claim 24, Rottoo teaches the method of claim 23, further comprising, before reserving compute resources, presenting to a requestor of a reservation of the first and second type of resources an analysis of the compute resources and a possible reservation (**Abstract, lines 27-29; creates a resource availability matrix; indicating exactly which resources satisfy request**).

52. As to claim 25, Rottoo teaches the method of claim 24, wherein the presented analysis relates to a quantity (**Abstract**) and quality of the compute resources in relation to the request for a reservation for resources (**Pg 10, lines 30-31: quantity; Pg 2, lines 14-20; bandwidth determines quality**).



53. As to claim 26, Rottoo teaches the method of claim 25, further comprising: receiving from the requestor of a reservation a revised request for resources based on the presented analysis (**Pg 5, lines 13-14; negotiate**).

***Response to Arguments***

54. Applicant's arguments with respect to claims 1-33 and 36-44 have been fully considered but are moot in view of the new ground(s) of rejection.

***Conclusion***

55. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

56. A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

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57. Any inquiry concerning this communication or earlier communications from the examiner should be directed to DOUGLAS BRYANT whose telephone number is (571)270-7707. The examiner can normally be reached on M-F 8:00-5:00pm Est.

58. If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, An Meng-ai can be reached on 571-272-3756. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

59. Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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